Coffee Break Training - Fire Protection Series

Hazardous Materials: Foam Fire Protection for Storage Tanks

No. FP-2011-37 September 13, 2011

Learning Objective: *The student shall be able to identify foam fire protection application requirements for some bulk storage tanks.*

Inspections and preincident planning provide a good opportunity to assess the needs for foam application rates on flammable and combustible liquid tanks. This will help Incident Commanders (ICs) be confident they have access to adequate foam supplies to control a bulk tank fire.

Four key pieces of information are needed: 1) the tank configuration (such as cone or floating roof), 2) the method of foam application, 3) the tank roof surface diameter, and 4) the product being stored.

This 840,000-gallon (3.18-million L) aviation fuel storage tank should be assessed before an incident to compute an adequate foam application rate.

The following table, adapted from the National Fire Protection Association (NFPA) 11, *Standard for Low-, Medium-, and High-Expansion Foam Systems*, summarizes the recommendations. Note that these recommendations are applicable only for foam handlines and monitors; other types of foam fire protection (subsurface injection, topside application, or outlets beneath roof seals) have different requirements.

	Fixed roof or pan-type floating roof		Open top or covered floating roof tanks	
Tank size and application method	• Monitors for tanks up to 60 ft (18.3 m) in diameter. • Hand hoselines for tanks less than 30 ft (9.2 m) in diameter and less than 20 feet (6.1 m) in height.		• Monitors **not** recommended. • Hand hoselines suitable for rim fires in open top floating roof tanks.	
Application rate	0.16 gpm/ft^2 (6.5 L/min • m^2)		0.16 gpm/ft^2 (6.5 L/min • m)	
		Minimum discharge time (minutes)		**Minimum discharge time (minutes)**
Product characteristics	Flashpoint < 100 °F (37.8 °C)	65	Flashpoint < 100 °F (37.8 °C)	65
	Flashpoint 100–140 °F (37.8–60 °C)	50	Flashpoint 100–140 °F (37.8–60 °C)	50
	Crude oil	65	Crude oil	65

For additional information, refer to NFPA 11, NFPA 30, *Flammable and Combustible Liquids Code*, *International Fire Code*, Chapter 34, and NFPA 1, *Uniform Fire Code*™ Chapter 66.